
New Taxa of *Sarcopera* and *Marcgraviastrum* (Marcgraviaceae) from the Guayana Shield

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ABSTRACT. A new species, *Sarcopera flammifera*, and a new subspecies, *Sarcopera tepuiensis* subsp. *coccinea*, are described. Three new combinations, *Sarcopera aurantiaca*, *Sarcopera tepuiensis*, and *Marcgraviastrum pendulum*, are validated.

The planned treatments of Marcgraviaceae in the *Flora of the Venezuelan Guayana* and *Flora of the Guianas* series necessitate publication in advance of some new taxa in the genera *Marcgraviastrum* and *Sarcopera*, two genera recently validated by de Roon and S. Dressler (1997). A number of new combinations and new taxa were proposed by Bedell (1985) in her doctoral thesis, but subsequently only some of them were validly published (Bedell, 1988, 1993; de Roon & Dressler, 1997).

Sarcopera Bedell is based on *Norantea* subg. *Pseudostachyum* Delpino (Delpino, 1869). The genus is characterized by a spicate inflorescence with the nectariferous bracts inserted at the base of the small flowers. In her thesis Bedell proposed three new species of *Sarcopera* from the region, "*S. atrovinosa*, *S. coccinea* and *S. flammifera*." A new study of the available collections led us to the conclusion that only *S. flammifera* should be recognized as a new species. The proposed "*S. coccinea*" is here treated as a subspecies of *S. tepuiensis*.

Marcgraviastrum (Wittmack ex Szyszyłowicz) de Roon & S. Dressler is based on *Norantea* subsect. *Marcgraviastrum* Wittmack ex Szyszyłowicz (Szyszyłowicz, 1893). The genus is characterized by an umbelliform inflorescence.

Two generic transfers proposed by Bedell are herein validated and attributed to her, following an agreement between her and the senior author.

Sarcopera aurantiaca (Spruce ex Gilg) de Roon & S. Dressler, comb. nov. Basionym: *Norantea aurantiaca* Spruce ex Gilg, Bot. Jahrb. Syst. 25, Beibl. 60: 32. 1898. TYPE: Brazil. Amazonas: prope Panuré ad Río Vaupés, Spruce 2719 (holotype, B destroyed, photographs F, GH, MO, MICH, US; lectotype, selected here, K; isolectotypes, BM, BR, C, E, G, GH, GOET, LE, NY, OXF, P, TCD, W).

Wittmack (1878) cited *Norantea aurantiaca* Spruce ("Msc. in coll. ad n. 2719"), a nomen nudum, as a synonym of *Norantea anomala* considering the Spruce collection to be a "forma juvenilis." Though Wittmack in a note gave a short description of Spruce's collection, it was not his intention to describe or publish a new species. Gilg (1898) was the first to recognize and validly publish *Norantea aurantiaca* Spruce as a separate species, differing from *Norantea anomala* in the inflorescence, the shape, the venation, and the hypophyllous glands of the leaves and in particular the presence of two large hypophyllous glands, one on each side, in the apical part of the blade and some scattered very small ones. Thereupon *Norantea aurantiaca* Spruce became validated, and consequently *Norantea aurantiaca* Spruce ex Gilg is the correct basionym of *Sarcopera aurantiaca*. Bedell (1985) attributed *Norantea aurantiaca* Spruce to Gilg and Werdermann (1925), overlooking the earlier publication of Gilg (1898). Ferreira (1995) was also wrong when she published *Norantea aurantiaca* Spruce ex Ferreira. She erroneously considered *Norantea aurantica* Spruce as used by Gilg (1898) and by Gilg and Werdermann (1925) to be a nomen nudum, since no Latin diagnosis was supplied. This, however, was not required at that time (Art. 36.1 ICBN; Greuter et al., 1994). Because of its

spicate inflorescence this species clearly belongs in *Sarcopera*.

Sarcopera flammifera de Roon & Bedell, sp. nov. TYPE: Brazil. Roraima: Sierra Tepequem, *Maguire & Maguire 40104* (holotype, U; isotypes, MARY not seen, NY). Figure 1.

Frutex vimineus sarmentosus, plerumque scandens vel liana. Folia ramorum floriferorum petiolis 3–10 mm longis; lamina coriacea, elliptica, obovato-elliptica vel interdum elliptico-oblonga, 5–9(–12) cm longa, 2–4.5(–6.5) cm lata, apice obtusa vel rotundata vel raro perbreviter acuminata, basi acuta vel obtusa aut rotundata; glandulae hypophyllae plerumque paucae, variabiles quoad magnitudinem et numerum, nonnunquam nullae, interdum 1–3 conspicuae, dispersae, et aliquot minutae secus marginem dispositae. Inflorescentia spicata multiflora, rhachide (15–)20–35(–45) cm longa, badia; bracteae nectariferae cucullatae vel cochleares, 10–15 mm longae. Flores sessiles; petala elliptica vel elliptico-oblonga, 2.5–4 mm longa, 1.5–2.5 mm lata; stamina 7–10(–13); ovarium 3–4-loculare. Fructus globosus, ad 1 cm diametro.

Scandent sprawling shrub or small liana; branchlets subterete, the older branches with a grayish bark, often with striations of lenticels, the younger ones reddish brown. Leaves coriaceous, dark green above, dull and paler below, when dried grayish, greenish gray, or dark brown colored above, light to dark brown beneath; petiole 3–10 mm long, 1.5–2 mm wide, flattened or canaliculate above; blade elliptic to obovate, 5–9(–12) × 2–4.5(–6.5) cm, basally acute to rounded, apically obtuse to rounded, rarely acute, mucronate when young, retuse after loss of the deciduous mucro; margin revolute; hypophyllous glands varying in number and size, often 1–3 distinct small to medium-sized ones, 1–2 mm diam. with a light-colored circumvallation, mostly only in the apical half, sometimes very minute and only visible with a hand lens or lacking and only the two glands at the base of the midrib present; midvein flat to slightly prominent above, strongly prominent below, lateral veins usually (slightly) prominent below, sometimes obscure. Inflorescence (15–)20–35(–45) cm long, with 100–140 sessile flowers; rhachis 3–5 mm thick at the base, sulcate when dried, dark reddish brown; foliaceous bract ovate, 1 × 0.5 cm, with one pair of hypophyllous glands; nectariferous bracts leathery and succulent, deep red to maroon, ladle-shaped, ca. 1–1.5 cm long, becoming progressively reduced toward the base of the rachis, stalk flattened, widened toward the cup, ca. 8–10 mm long, cup to ca. 5 mm long and ca. 4 mm wide. Flowers leathery, deep red, 3–4 mm diam.; bracteoles triangular to ovate, ca. 1 mm long; sepals sub- to semi-orbicular, ca. 1 mm long, 1–2 mm wide; petals elliptic to

elliptic-oblong, 2.5–4 mm long, 1.5–2.5 mm wide, free or slightly connate at base, reflexed at anthesis; stamens 7–10(–13), filaments flattened, 1.5–2 mm long, connate at base and adnate to the petals, anthers triangular-ovate, base cordate, ca. 1 mm long, pollen magenta; ovary ovate-subglobose, ca. 1–1.5 mm long, 3–4-loculed. Fruit dark red to black-purple, globose, 5–10 mm diam.; seeds few, reniform, ca. 2 mm long, black, shining, reticulate.

Distribution. *Sarcopera flammifera* occurs in a variety of habitats (forests, along rivers, rocky slopes, and savannas at altitudes from 100 to 1800 m) in the Caura and Caroní basins of Bolívar state in Venezuela and in northern Brazil.

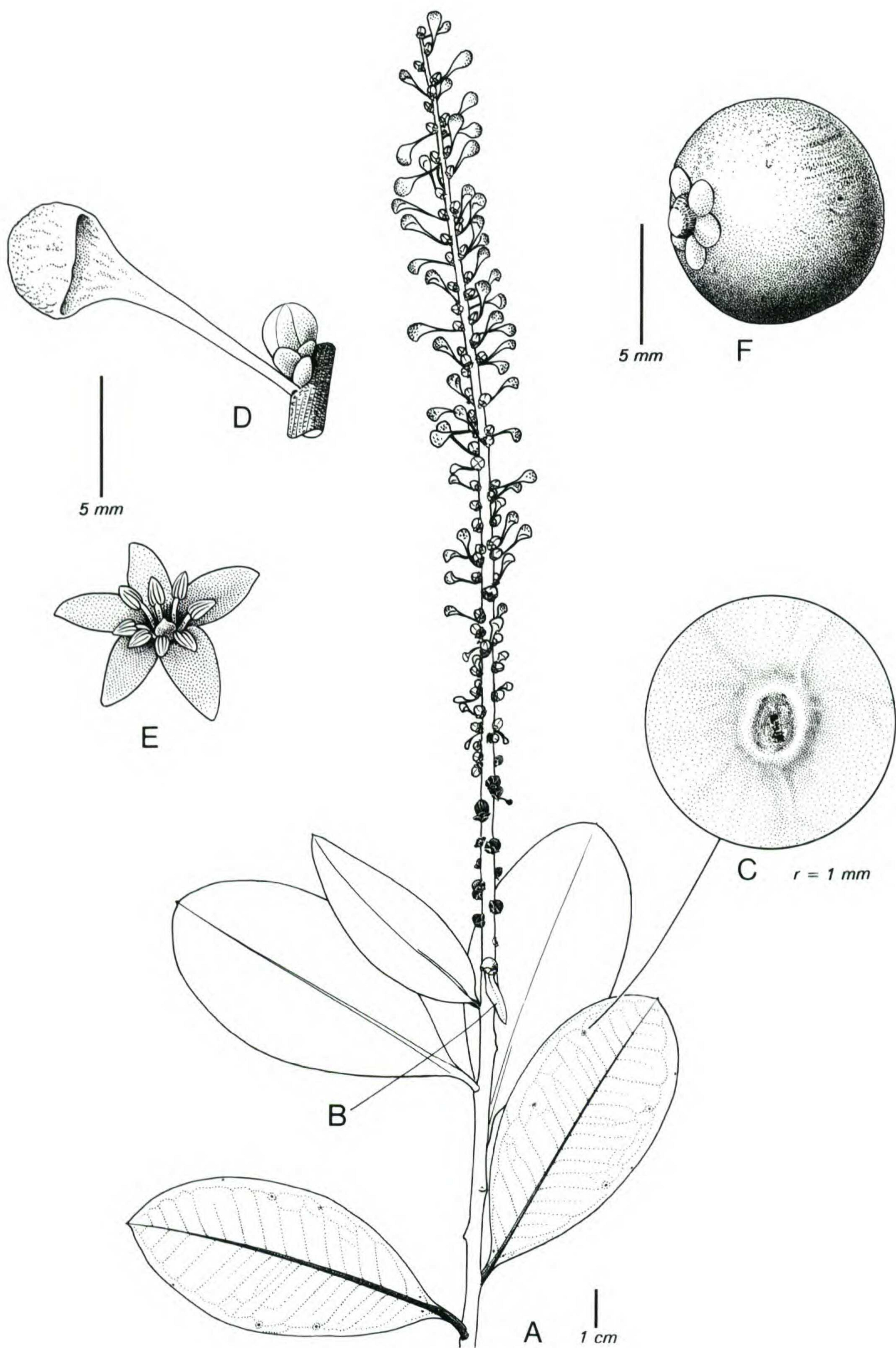
Etymology. The name refers to the blazing inflorescence with its red-colored nectariferous bracts giving the impression of little flames.

The species is distinguished from *Sarcopera tepuiensis*, which is found on tepuis of Bolívar state at altitudes above 1000 m, by its smaller and somewhat less coriaceous leaves, and the lower number of stamens. The species is also related to *Sarcopera aurantiaca* from Colombia and Brazil, from which it is mainly distinguished by the shape of the leaves.

Remarks. Bedell (1985) described the pollen of this species as pale yellow. Indeed in some collections, e.g., *Steyermark 90246* and *113260*, the pollen seems to have this color, but in this and other cases it is doubtful whether the pollen is mature. In some other collections, e.g., *Maguire & Maguire 40151* and *Maguire et al. 53529*, there is no doubt that the pollen is magenta-colored. Therefore we assume that the pollen of *Sarcopera flammifera* has no different color from that of all other species of the genus.

The only known collection of the proposed “*S. atrovinosa*” (Bedell 1985), *Agostini 402* (NY, U, US, VEN), from pequeña meseta del Norte de Serranía Cararubán, SE de Canaima, Bolívar state, appears to be no more than an individual of *S. flammifera* with an unusual leaf shape.

Several collections, e.g., *Holst & Liesner 3127* (MO, NY) and *3384* (MO) from the valley of Río Coro-Coro, W of Serranía de Yutaje, *Maguire & Maguire 35109* (NY, U) from Serranía de Yutaje, Río Manapiare, Caño Yutaje, *Phelps & Hitchcock 3* (NY, VEN) and *Phelps 114* (VEN) from Cerro Yavi, all in northern Amazonas state, and *Steyermark et al. 109410* (NY, US, VEN) from selva de galería Río Marajano, cumbre de Cerro Jaua in western Bolívar state, collected at altitudes of 650–1800 m, probably belong to *Sarcopera flammifera*, but are different because of larger leaves and the presence



of rather numerous foliar sclereids. Bedell (1985) wrongly placed some of these collections in her "*Sarcopera coccinea*" (= *Sarcopera tepuiensis* subsp. *coccinea*) from which they are distinguished by the shape of the leaves (obovate vs. oblanceolate) as well as by the number of the stamens (8–12 vs. 15–30). Possibly these specimens belong to an undescribed subspecies of *Sarcopera flammifera*.

Specimens examined. VENEZUELA. **Bolívar:** pequeña meseta del Norte de Serranía Cararubá, *Agostini 402* (NY, U, US, VEN); Cerro Bolívar, Ciudad Piar, *Aristeguieta 2184* (NY, VEN); 2 km de la margen izquierda del medio Río Paragua, 102 km SW de La Paragua, *Aymard 5967* (MO); cerca del Río Cushimí, afluente del Erebató, *Brewer 60* (VEN); Río Caroní, Raudales de Arepuchi, *Cardona 1935* (US, VEN); Río Caroní, Cerro Arepuchi, *Cardona 1940* (NY, US, VEN); Río Carrao, Salto Hacha, *Cardona 2842* (US); Cerro Guaiquinima, *Delascio & Ortiz 14290* (VEN); afluentes mas occidental del Río Carapo, Cerro Carapo, en el cumbre del Guaiquinima, *Duno & Brewer 331* (VEN); Parque Nacional "Canaima," 10 km E of Cerro Venado, 25 km ENE of Canaima, *Duno de Stefano et al. 467* (VEN); Río Chicanán, 2 km S of Río Chibau, *Maguire et al. 53529* (NY, U, VEN); Río Paragua near "Minas de Manaima," *Stergios 10297* (NY, VEN); Sierra Ichún, N of Salto María Espuma along Río Ichún, *Steyermark 90246* (NY, U, US, VEN); Sabana de Cusimi, near Río Cusimi, affluent of Río Erebató, *Steyermark 93162* (NY, U, VEN); Cerro Guaiquinima, Salto del Río Szczerbanari, *Steyermark et al. 113260* (F, MO, U, US, VEN). BRAZIL. **Amazonas:** Serra Aracá, *Rosa & Lira 2287* (U). **Roraima:** Sierra Tepequem, *Maguire & Maguire 40104* (NY, U); Sierra Tepequem, near E escarpment, *Maguire & Maguire 40151* (NY, U); Sierra Tepequem, upper plateau and summit, *Prance et al. 4417* (AAU, K, NY, U).

Sarcopera tepuiensis (de Roon) Bedell, comb. nov. Basionym: *Norantea tepuiensis* de Roon, *Acta Bot. Venez.* 2: 247. 1967. TYPE: Venezuela. Bolívar: Chimanta Massif, NW slopes of Churi-tepui (Muru-tepui), along Río Sarrén, *Wurdack 34353* (holotype, U; isotypes, MARY not seen, NY, US).

Sarcopera tepuiensis subsp. ***coccinea*** de Roon & S. Dressler, subsp. nov. TYPE: Venezuela. Amazonas: Cerro Yapacana, *Maguire et al. 30687* (holotype, U; isotype, NY).

A subsp. *tepuiensis* differt foliis plerumque oblanceolatis glandulis hypophyllis parvis numerosis biseriatatis.

Liana to 30 m or erect to sprawling shrub or tree

to 10 m tall; older branches grayish, the younger ones reddish brown. Leaves coriaceous, dark dull green above, paler below, when dried greenish to yellowish brown or dark brown above and light to dark brown below; petiole rather stout, 0.5–2 cm long, ca. 3 mm wide; blade obovate-oblong to oblanceolate, 8–22 × 3.5–7.5 cm, basally acute to cuneate, apically obtuse or rounded, mucronate when young, afterward often retuse, margins slightly revolute, hypophyllous glands small, to 0.5 mm diam., with a minute pore, 2 at the base near the midrib and 5–8 in an often irregular row at ca. 5 mm from the margin in the middle of the leaf and closer to the margin toward the top. Inflorescence 30–50 cm long with 130–155 sessile flowers; rachis stout, 5–7 mm diam. at the base, longitudinally grooved and yellowish to reddish brown or dark brown when dried; foliaceous bract elliptic, ca. 2.5 cm long, 0.5–1 cm wide, with 1–2 pairs of hypophyllous glands; nectariferous bracts succulent, bright red, ladle- to helmet-shaped, fully developed in the upper part of the rachis, becoming smaller to wholly reduced to the base, 1–1.5 cm long, the cup 3–5 mm long, ca. 5 mm wide, the stalk flattened, 5–10 mm long, inserted at the base of the flowers. Flowers sessile, leathery, bright red; bracteoles ± deltoid, 0.5–1 mm long, to 1.5 mm wide; sepals broadly suborbicular, ca. 1 mm long, 1–2 mm wide; petals oblong, 3–5 mm long, ca. 2 mm wide; stamens (15–)20–25(–30) in two or sometimes three whorls; filaments flattened, connate for ½–¾ of their length, ca. 2 mm long, in the outer row longer than in the inner row, and adnate to the petals; anthers triangular to ovate, cordate-sagittate at base, ca. 1.5 mm long, pollen magenta; ovary ovate or ovate-conical, 1–2 mm long, 1–1.5 mm diam., 3-loculed with 6–8 ovules per locule. Fruit dull red, ca. 1 cm diam.; seeds reniform, ca. 2 mm long, shining, reddish black.

Distribution. *Sarcopera tepuiensis* subsp. *coccinea* occurs on several tepuis of Amazonas state in Venezuela, at altitudes of 1000–1400 m.

Etymology. The name refers to the bright scarlet nectariferous bracts.

The differences between *Sarcopera tepuiensis* subsp. *tepuiensis* and subspecies *coccinea* are mainly in the shape of the leaves and the number of the hypophyllous glands. In subspecies *coccinea* the leaves are oblong-obovate to oblanceolate with two

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glands at the base and two rows of 5–8 small hypophyllous glands along the margin, while subspecies *tepuiensis* has obovate to oblong-obovate leaves with two glands at the base and usually only 1–2 hypophyllous glands per side. In our estimation these differences are considered too variable to distinguish the two taxa as separate species.

The two subspecies of *Sarcopera tepuiensis* occupy separate geographic areas: subspecies *coccinea* is known from mountains in southern Amazonas state in Venezuela and from Serra Araca in adjacent Brazil; subspecies *tepuiensis* is known from over 25 collections from the tepuis of eastern Bolívar state in Venezuela and the Pakaraima Mts. in adjacent Guyana. Most collections of both subspecies are from above 1000 m.

Paratypes. VENEZUELA. **Amazonas:** Cerro Duida, *Fariñas et al.* 438 (NY, U, VEN); Serranía Parú, Cerro Asisa, near laguna Asisa, *Hoyos & Morillo* 95 [herb. 96222] (VEN); Cerro Marahuaca, above Río Yameduaka, *Liesner* 17679 (MO); Cerro Marahuaca, N of Sima Camp, *Liesner* 18477 (MO, VEN); Cerro Yapacana, *Maguire et al.* 30630 (NY), 30687 (NY, U); Cerro de la Neblina, Río Yatua, Caño Grande, *Maguire et al.* 42514 (MO, NY, U); Cerro Yapacana, *Steyermark & Bunting* 103167 (MO, NY, U, VEN); Cerro Marahuaca, Sima Camp, Caño Negro, *Steyermark & Holst* 130479 (VEN). BRAZIL. **Amazonas:** Serra Araca, plateau of northern massif, *Prance et al.* 29030 (K, NY).

Marcgraviastrum pendulum (Lanjouw & van Heerdt) Bedell, comb. nov. Basionym: *Norantea pendula* Lanjouw & van Heerdt, *Recueil Trav. Bot. Néerl.* 37: 282. 1940. TYPE: Suriname. Emmagebergte, 700 m, *B. W.* 5682 (holotype, U).

The leaves with a dense tangle of foliar sclereids, the umbelliform inflorescence, and the large flowers with over 50 stamens are the convincing characters to place this species in *Marcgraviastrum*.

Distribution. The species is known from mountains in Guyana, Suriname, French Guiana, and eastern Venezuela. A representative collection from the region is from Bolívar state: Alto Río Cuyuni, Río Uiri-yuk, *Maguire et al.* 46979 (U, VEN).

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Literature Cited

- Bedell, H. G. 1985. A Generic Revision of Marcgraviaceae I. The *Norantea* Complex. Ph.D. Dissertation (ined.), University of Maryland, College Park.
- . 1988. Marcgraviaceae. In: R. A. Howard (editor), *Flora of the Lesser Antilles* 5: 300–310. Jamaica Plain, Massachusetts.
- . 1993. In: L. Brako & J. L. Zarucchi, *Catalogue of the Flowering Plants and Gymnosperms of Peru*. Appendix 1. *Monogr. Syst. Bot. Missouri Bot. Gard.* 45: 1256.
- Delpino, G. G. F. 1869. Ulteriori osservazioni e considerazioni sulla Dicogamia nel regno vegetale. *Rivista monografica della famiglia delle marcgraviacee precipuamente sotto l'aspetto della biologia ossia delle relazioni di vita esteriore.* *Atti Soc. Ital. Sci. Nat.* 12: 179–213.
- Ferreira, G. L. 1995. Estudo Taxonômico das Espécies Brasileiras do Gênero *Norantea* Aublet (Marcgraviaceae). *Arch. Jard. Bot. Rio de Janeiro* 33(2): 9–53.
- Gilg, E. 1898. Marcgraviaceae. In: Ign. Urban (editor), *Plantae novae americanae imprimis Glaziovianae*. II. *Bot. Jahrb. Syst.* 25, Beibl. 60: 25–35.
- & E. Werdermann. 1925. Marcgraviaceae. In: A. Engler & K. Prantl (editors), *Die natürlichen Pflanzenfamilien*, ed. 2, 21: 94–106. Wilhelm Engelmann, Leipzig.
- Greuter, W., F. R. Barrie, H. M. Burdet, W. G. Chaloner, V. Demoulin, D. L. Hawksworth, P. M. Jørgensen, D. H. Nicolson, P. C. Silva, P. Trehane & J. McNeill. 1994. *International Code of Botanical Nomenclature* (Tokyo Code). *Regnum Veg.* 131.
- Roon, A. C. de & S. Dressler. 1997. New taxa of *Norantea* Aublet s.l. (Marcgraviaceae) from Central America and adjacent South America. *Bot. Jahrb. Syst.* 119: 327–335.
- Szyszyłowicz, I. 1893. Marcgraviaceae. In: A. Engler & K. Prantl (editors), *Die natürlichen Pflanzenfamilien* 3(6): 157–164. Wilhelm Engelmann, Leipzig.
- Wittmack, L. 1878. Marcgraviaceae. In: C. F. P. von Martius (editor), *Flora Brasiliensis* 12(1): 213–258. München, Wien, Leipzig.